

## ABSTRACT OF THE DISCLOSURE

Compositions comprising (A) non-branched polybutadiene having terminal hydroxyl functionality less than 2 per molecule by average; and (B) branched polybutadiene  
5 having terminal hydroxyl functionality more than 2 per molecule by average; the weight ratio of (A) to (B) being about 99:1 to 1:99. These compositions are reacted with organic polyisocyanates to form prepolymers which are cured by reaction with a chain extender such as a diol to produce cured resins which exhibit unexpectedly improved tear strength properties and thermoplasticity with high modulus, and improved tackiness and shelf life  
10 for hot melt adhesives. The prepolymers have lower viscosity and better storage stability as compared with those from conventional branched polybutadienes of the (B) type.

Alternatively, the compositions can be cured directly in a one-shot reaction with diisocyanates to form a polyurethane with the described combination of properties. In addition, the compositions of (A) and (B) can be reacted to form polybutadienes with  
15 carboxyl, amine or epoxy-terminal functionality which are useful components of formulations.